

CLAIMS

1. Capacitive voltage multiplier for generating voltage pulses, preferably up to 100 V, that are higher than the supply voltage for displays, non-volatile memories and corresponding units especially in small electronic devices, such as handheld telecommunication terminals or corresponding devices, wherein the multiplier comprises a switching capacitor circuit (21) provided with capacitors and switches for charging the capacitors in parallel and discharging them in series in order to deliver a high voltage pulse,
- 10 **characterised** in that the multiplier further comprises a diode chain circuit (22) consisting of a diode-chain and pumping capacitors for delivering high voltage current.
2. Capacitive voltage multiplier according to claim 1, **characterised** in that when high voltage pulse is desired in the switching capacitor circuit (21) the series coupling switches (odd) are activated by a control pulse and all other switches (even) are opened and that in stand-by mode (no pulse) the series coupling switches (odd) are open and all other switches (even) are closed in order to charge the pump capacitors from the supply voltage, and that charge sharing will occur with the charge including the load capacitance (103).
- 15 3. Capacitive voltage multiplier according to claim 1 or 2, **characterised** in that the switches of the switching capacitor multiplier (21) are MEMS switches.
- 20 4. Capacitive voltage multiplier according to claim 1, 2 or 3, **characterised** in that the output of the switching capacitor circuit (21) is activated at the start of a control pulse.
- 25 5. Capacitive voltage multiplier according according to any of the preceeding claims, **characterised** in that the output of the switching capacitor circuit (21) is not coupled via a diode so that current at the end of the control pulse can flow back into the pump capacitors, whereby the charge in the load capacitor is partly restored in the pumping capacitors.
- 30 6. Capacitive voltage multiplier according to any of the preceeding claims, **characterised** in that the diode chain multiplier circuit (22) is continuously operated during the control pulse duration and holds the output voltage at a fixed level.
- 35 7. Capacitive voltage multiplier according to any of the preceeding claims, **characterised** in that the diode chain multiplier circuit (22) output is through a diode (102) and that no reservoir capacitor is used.

8. Capacitive voltage multiplier according to claim 1, **characterised** in that a supply voltage input diode (101) is used for the switching capacitor circuit (21) allowing the initial voltage of the pump capacitors to be higher than the incoming supply voltage.
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